

Alg. 2 Warm Up #8-2

1. Write the equation for the exponential function with a horizontal asymptote at $y=0$, that passes through the points:

$$y = a \cdot b^x$$

a) (2, 3) & (5, 81)

b) (2, 6.4) & (5, 3.2768)

x	y
2	3
3	
4	
5	81

$$b^3 = \frac{81}{3}$$

$$b^3 = 27$$

$$b = 3$$

$$81 = a \cdot b^5$$

$$3 = a \cdot b^2$$

$$\sqrt[3]{27} = \sqrt[3]{b^3}$$

$$b = 3$$

$$y = a \cdot 3^x$$

$$3 = a \cdot 3^2$$

$$3 = 9a$$

$$a = \frac{1}{3}$$

$$y = \frac{1}{3}(3)^x$$

$$3.2768 = a \cdot b^5$$

$$6.4 = a \cdot b^2$$

$$\sqrt[3]{.512} = \sqrt[3]{b^3}$$

$$.8 = b$$

$$6.4 = a(.8)^2$$

$$6.4 = a(.64)$$

$$a = 10$$

$$y = 10(.8)^x$$

HW Questions:

- CL 2-170. Chucky and Angelica were reviewing equations of parabolas for their upcoming math test. They disagreed on what the equation would look like for a parabola whose vertex was at $(-4, 3)$.
- Help them write an equation for a parabola that opens upward from its vertex at $(-4, 3)$. What is the equation of its line of symmetry?
 - Chucky wants the same parabola to open down and Angelica wants it to be compressed. Show them how to change your original equation to meet both of their desires. Does the line of symmetry change?
 - Move your parabola from part (b) 7 units to the right and 8 units down and stretch it vertically so that it is thinner than the original parabola. What is the equation of the parabola? What is the equation of its line of symmetry?

CL 2-171. For each equation, give the locator point (h, k) and the equation of any asymptotes, and then draw the graph.

a. $f(x) = -|x+2| - 1$

b. $y = \frac{1}{x} + 2$

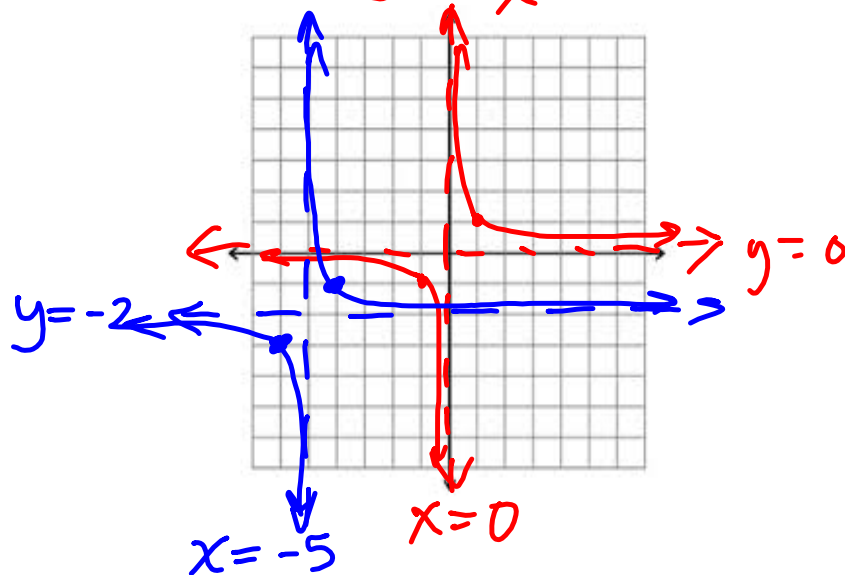
c. $y = \frac{1}{x+5} - 2$

d. $y = -x^3 + 5$

left 5 down 2

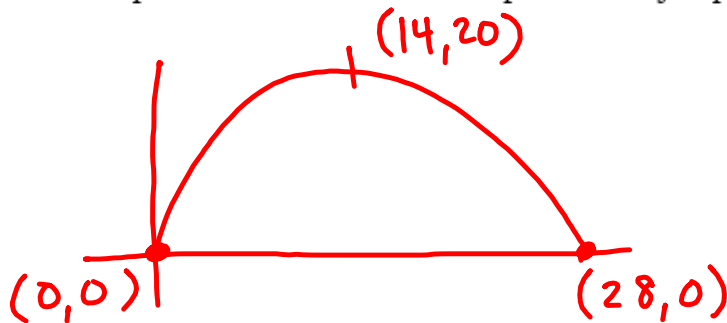
CL 2-172. For each of the functions in problem 2-171 sketch the graph of $y = f(-x)$.

c) $y = \frac{1}{x}$ (parent)





CL 2-173. Gloria the grasshopper is working on her hops. She is trying to jump as high and as far as she can. Her best jump so far was 28 cm long, and she reached a height of 20 cm. Sketch a graph and write an equation of the parabola that describes the path of her jump.



$$y = a(x-h)^2 + k$$

$$y = a(x-14)^2 + 20$$

$$0 = a(0-14)^2 + 20$$

$$0 = a(196) + 20$$

$$\frac{-20}{196} = \frac{a(196)}{196}$$

$$a = -\frac{5}{49}$$

$$y = -\frac{5}{49}(x-14)^2 + 20$$

$$y = a(x-p)(x-t)$$

$$y = a(x-0)(x-28)$$

$$20 = a(14-0)(14-28)$$

$$20 = a(14)(-14)$$

$$\frac{20}{-196} = \frac{a(-196)}{-196}$$

$$a = -\frac{5}{49}$$

$$y = -\frac{5}{49}(x)(x-28)$$

CL 2-174. Use what you know about transforming parent graphs to write an equation for each of the graphs described below.

a. A parabola stretched by a factor of 0.25, opening downward and shifted 12 units down and 3 units left.

b. A cubic with a stretch factor of 2 and a locator point at $(-6, 1)$.

c. A hyperbola, $y = \frac{1}{x}$, but with asymptotes at $y = -6$ and $x = 2$.

$$y = \frac{1}{x-2} - 6$$

CL 2-175. Find the equation of the exponential functions with a horizontal asymptote at $y = 0$ through the following pairs of points.

a. $(2, 99)$ and $(6, 8019)$

b. $(-1, 50)$ and $(2, 25.6)$

$$50 = ab^{-1}$$

$$\frac{25.6}{50} = \frac{ab^2}{ab^{-1}}$$

$$0.512 = b^2 b^1$$

$$\sqrt[3]{0.512} = \sqrt[3]{b^3}$$

$$b = 0.8$$

Short Quiz Wednesday:

Special points of a parabola

Solve when x is in the denominator

x -int ($y=0$)
 y -int ($x=0$)

Vertex \leftarrow Average the x -int.
or complete the \square

Practice for tomorrow's Group Event,
quadratic situation to equation.

Review the following problems from
your homework:

2- #69, 81, and 173

Today's Classwork: Tan WS, Ch. 2 Review

HW:

CI 2- #176 ---> 181

Quiz #5 Wednesday:

Describe transformations

Graph a parabola

Group Event Wednesday:

Situation to quadratic equation

Chapter 2 Test: Thursday